

**Oklahoma Department of Agriculture,  
Food, and Forestry (ODAFF)**

**Actions Relevant To The  
Scenic Rivers Act and Water Quality Standards**

*ODAFF May, 2005*

**Evaluation of the Impact of Agricultural Sources Located in the Scenic River Watersheds:**

- **Poultry Farms:** There are 111 poultry operations, more than half of them raising broilers, registered with ODAFF, consisting of 92 operations in the Upper Illinois River (UIR) watershed encompassing parts of Adair County, Cherokee County and Delaware County; 3 operations in the Lee Creek/Little Lee Creek (LLC) watershed encompassing parts of Adair, Leflore and Sequoyah Counties; and 16 operations in the Upper Mountain Fork (UMF) watershed encompassing part of McCurtain County. These operations manage a total of 462 houses with 429 houses and 8,001,330 birds in UIR watershed, 8 houses and 140,800 birds in LLC watershed, and 25 houses and 301,400 birds in UMF watershed. The trend is: number of operations as well as number of poultry houses decreased; however, houses are being built larger, resulting in more number of bird spaces from 8,309,510 in 2004 to 8,443,530 this year, approximately 1.6% increase. The number of birds in UIR watershed increased approximately 2.9 %, from 7,766,710 in 2004 to 8,001,330 this year. While the number of birds in LLC and UMF watersheds decreased 23% and 16% respectively.
- **Amount of Litter Produced and Nutrient Generated by Poultry Farms:** More than half of the poultry operations in the watersheds raise broilers, and broilers normally generate more litter and nutrient than pullets, layers and turkeys. In the context of this report, the total amounts of litter and nutrients produced for all operations are estimated based on broiler's production rate of 18 lbs of litter per year per space, and its nutrient values of 46 lbs of total Nitrogen and 53 lbs of P<sub>2</sub>O<sub>5</sub> per ton of litter.<sup>(1)</sup> The estimated amount of litter and nutrients generated in the different watersheds per year are as follows:

<u>Watersheds</u>	<u>Litter (ton)</u>	<u>Total N (ton)</u>	<u>P<sub>2</sub>O<sub>5</sub> (ton)</u>	<u>Phosphorus P (ton)</u>
UIR	72,012	1,656	1,908	833
LLC	1,267	29	34	15
UMF	2,713	63	72	31
<b>Total:</b>	<b>75,992</b>	<b>1,748</b>	<b>2,014</b>	<b>879</b>

<sup>(1)</sup>Table 11: Estimated Solid Manure Characteristics, Manure Characteristics, Manure Management System Series, Midwest Plan Service (MWPS)-18, Section 1.

Compared to last year, there is a slight increase (about 1.6 %) in litter produced, from 74,785 tons to 75,992 tons, resulting in a small increase of P<sub>2</sub>O<sub>5</sub> generated: from 1,981 tons in 2004 to 2,014 tons this year.

The above estimation based on the actual bird space is more conservative than the traditional method of estimating based on a litter production rate of 125 tons per year per house. Since the houses are larger, the number of chicken spaces per house

**EXHIBIT**

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increase as well as the amount of litter generated. The total amount of manure produced per the latter method would be 57,750 tons (53,625 tons in UIR, 1,000 tons in LLC and 3,125 tons in UMF). Thus, the former method is more appropriate in evaluating the impact of poultry industries in the watersheds. It is also noted that the OSU (Oklahoma State University) Extension Facts F-2228 "*Fertilizer Nutrients in Animal Manure*" specified an average content of  $P_2O_5$  of manure in Oklahoma of 61lbs per ton of manure for broiler. Based on this phosphorus content and the latter method for estimating manure produced of 57,750 tons, the total amount of  $P_2O_5$  generated in the watersheds would be 1,761 tons, compared to 2,014 tons per the former method as presented in the above table. The difference between the two methods is within 12.5 % of each other.

- **Soil Test Phosphorus (STP):** ODAFF inspectors collected 106 soil samples at 69 poultry operations located in several counties in the Scenic River watersheds in the Summer and Fall of 2002. The lab results indicated the following:

➤ 16 out of 106 samples (15.09%) had phosphorus levels above 400.

#### **Strategies and Goals:**

##### **(1) For Poultry operations:**

- Evaluate the accuracy of STP data of lands located in the watersheds as submitted by poultry applicators through required annual reports to ODAFF; spot check the STPs, by conducting on site inspection and soil sample collection. Notify the applicators of the sites with currently more than an STP of 250 and do not allow them to apply additional litter on these lands.
- Coordinate with growers in locating available lands in the watersheds with STP less than 250 for future land application of litter. This will help determine the amount of litter, if any, to be transferred out of the basins/watersheds.
- Measure in-stream P levels upstream and downstream of the poultry operations and/or litter land application sites by setting up monitoring stations in the Scenic Rivers. Get access to and evaluate currently available OWRB BUMP or USGS data on nutrient levels in the watersheds.
- Evaluate the above data to determine effectiveness of land application restrictions, and the appropriateness of the recommended STP threshold value.
- Select a typical litter land application site located within ¼ miles of a scenic river, coordinate with grower and/or NRCS to monitor phosphorus levels in the runoff water within 100 feet outside of the perimeter of the land application field after storm events, and to measure the phosphorus content of the soil of the field to determine the phosphorus amount leaving the field, if any, in order to develop or adjust the STP threshold specific for the watershed or sub-watershed.

##### **(2) For Nursery Operations:**

There are two (2) large containerized plant nurseries along the Illinois River that have had irrigation tail-water return flow enter the river. These operations were monitored monthly for nitrate-nitrogen, total-phosphorous and pesticides from 1989 to 2001. One operation became totally contained in 1998 and only has runoff leaving their property during large rainfall events. These nurseries signed voluntary compliance agreements with ODAFF to reduce their yearly

average nitrate level in their discharge from a high of 27.99 mg/l NO<sub>3</sub>-N in 1989 to 10 mg/l in 1996. They also agreed to reduce the Phosphorus (total) level down to 1 mg/l.

- Conduct an inventory of fertilizer and pesticide operations in the scenic river watersheds.
- Monitor the irrigation return flow of the one remaining nursery to maintain compliance with the voluntary compliance agreements and the new phosphorus standard.
- Monitor the river upstream and downstream from the nursery operations to determine if impact to the river is occurring.
- Assist operations with developing management plans to reduce nutrient loading.
- Involve pesticide manufacturers if pesticides are detected in any irrigation tail-water due to normal label use.
- Work toward total retention and recycling of the irrigation water with the use of state and federal assistance within 10 years.